



HEALTHY ARIZONA WORKSITES PROGRAM
(HAWP) PRESENTS:

LUNG CANCER FACTS- RISK FACTORS, SYMPTOMS, AND TREATMENT



Presented by:

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WEBINAR HOUSEKEEPING

WELCOME

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Please type any questions into the chat or Questions panel and we will do our best to answer them all at the end.

All handouts and a copy of the presentation slides are available in the Handouts panel.

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A recording will be added to the library of HAWP webinars on our website within 48 hours.

Special thanks to our supporting partner Dignity Health for their generous support in making this webinar possible.

Lung Cancer Facts: Prevention, Diagnosis and Treatment

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- Surgical Director, Lung Cancer Screening Program

November 21, 2019



What we will be talking about...

- How common is lung cancer?
- Causes of lung cancer?
- What are risk factors?
- Diagnosis
- Treatment
- Lung cancer screening
- What you can do about lung cancer?
- E-cigarettes/vaping

How Common Is Lung Cancer?

- Lung cancer is the second most common cancer in both men and women
- It accounts for an estimated 25% of all cancer diagnoses
- It is more common in elderly patients
- Risk of lung cancer is **HIGHER** in smokers



Lung Cancer In Women

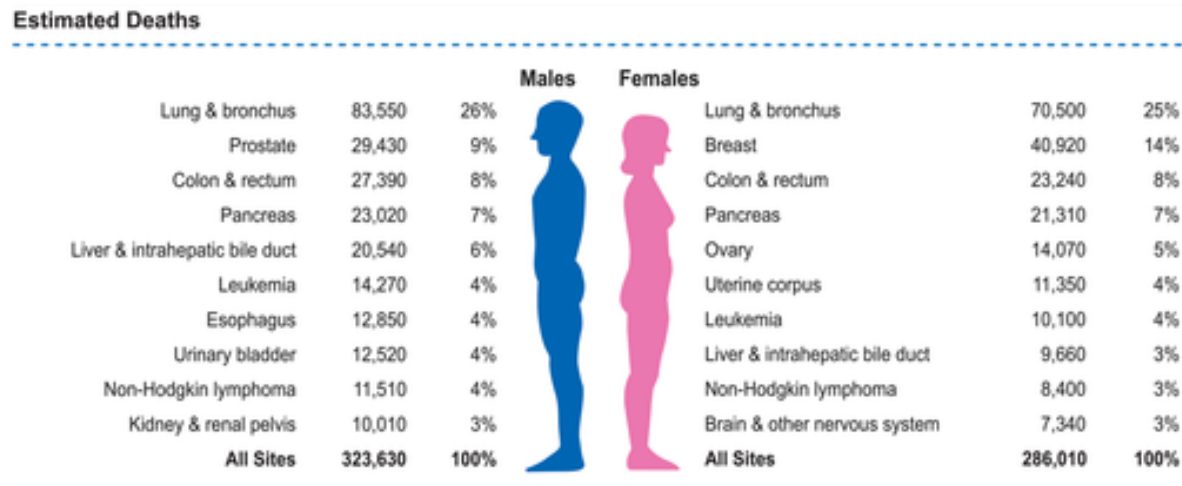
- 1/17 women will be diagnosed with lung cancer
- 2/3 of women diagnosed have never smoked
- 181 women die of lung cancer in the US every day
- It's the **#1 cause** of cancer death in women
- In 2019...
 - 111,710 women will be diagnosed with lung cancer
 - 66,020 women will die from the disease



Source: American Cancer Society

Lung Cancer Statistics

- > 170,000 cases in U.S. per year
- Leading cause of cancer deaths in both men and women accounting for about 1 in 4 cancer deaths per year



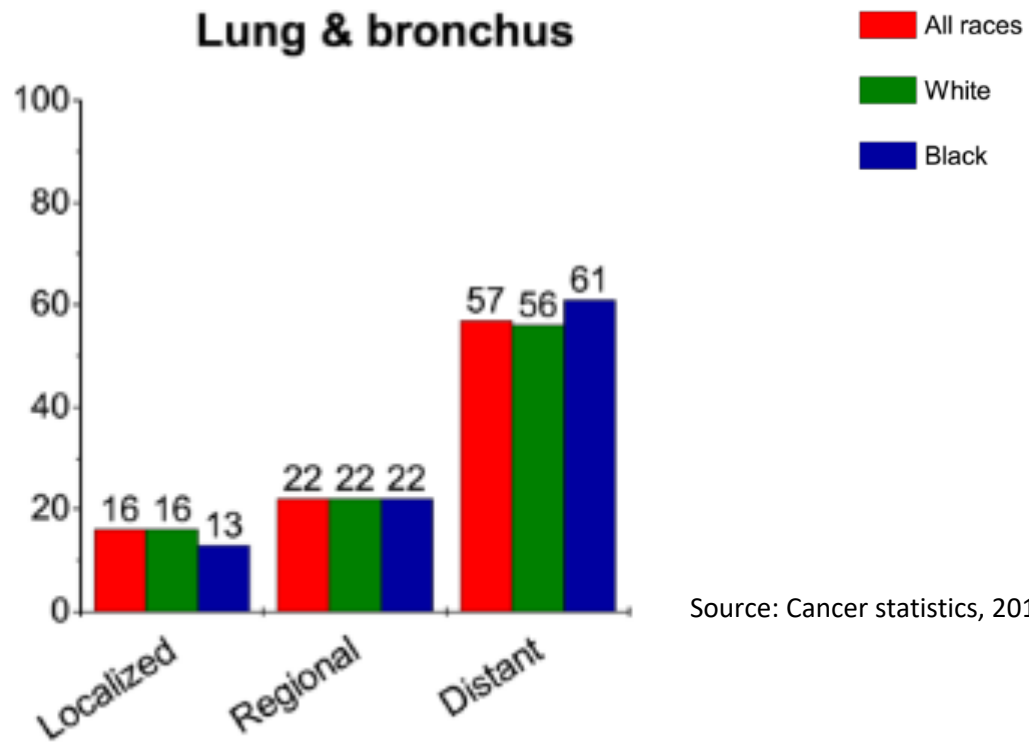
Source: Cancer statistics, 2018, Volume: 68

Lung Cancer In Arizona

- The rate of new lung cancer cases is 52.1 (based on the age-adjusted lung cancer incidence rate per 100,000)
 - National rate is 63.0
- 5-year survival rate for patients diagnosed with lung cancer is 20% (same as national rate)
- 19.1% of cases are caught at early stage (we can do better)
 - National rate is 55.3%
- 41.1% of cases are caught at late stage

Lung Cancer Facts

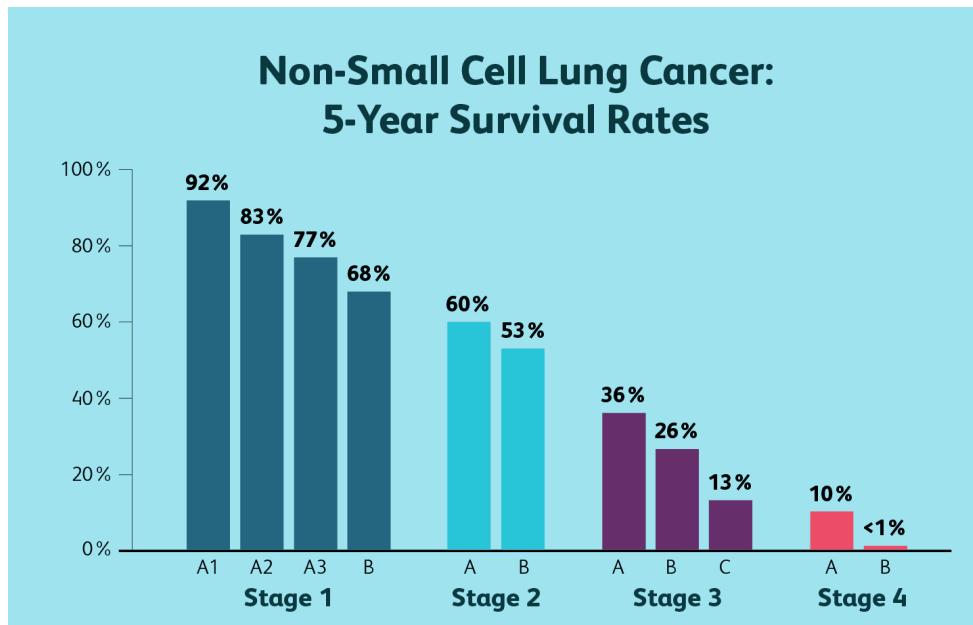
- Most patients are diagnosed with advanced disease



Source: Cancer statistics, 2018, Volume: 68

Lung Cancer Facts (Continued)

- Only 20% of those identified are likely to be surgically curable
- 5-year survival rate approaches 70% with complete resection
- Lung cancer is curable when diagnosed early!!!



Source: American Cancer Society 2017

Types of Lung Cancer

- **Non-small cell lung cancer (NSCLC)** – 80% of lung cancers
 - Adenocarcinoma (40%)
 - Squamous cell carcinoma (25-30%)
 - Bronchoalveolar carcinoma
 - Large cell carcinoma (undifferentiated)
 - Non-specified NSCLC
 - Carcinoid
 - Atypical carcinoid
- **Small cell lung cancer (SCLC)**

Lung Cancer Risk Factors

- **Smoking** is the leading cause of lung cancer
 - About 80% of lung cancer deaths are linked to smoking
 - Cigarette smoking is the leading risk factor for lung cancer
 - Cigars and pipes also increase risk
 - Hookah smoke has been shown to have the same cancer causing substances as cigarettes
- Exposure to second-hand smoke is another factor



Lung Cancer Risk Factors (Continued)

- Radon
 - Naturally occurring radioactive gas that results from breakdown of uranium in soil and rocks
 - Radon can be found in any building (home or workplace)
 - Cannot be seen, tasted, or smelled
 - According to the EPA, radon is the second leading cause of lung cancer and is the leading cause among non-smokers
- Asbestos
- Arsenic

Lung Cancer Risk Factors (Continued)

- Other cancer causing agents
 - Radioactive ores such as uranium
 - Inhaled chemicals or minerals such as:
 - Coal products
 - Beryllium
 - Cadmium
 - Vinyl chloride
 - Mustard gas
 - Silica
 - Diesel exhaust
- Radiation therapy to the chest
- Family history of lung cancer
- Air pollution

Lung Cancer Symptoms

- Lung cancer usually doesn't cause signs and symptoms in its earliest stages
- Signs and symptoms typically occur when the disease becomes more advanced
 - New cough that doesn't go away
 - Coughing up blood
 - Shortness of breath
 - Chest pain or ache
 - Hoarseness
 - Unexplained weight loss
 - Bone pain
 - Headache



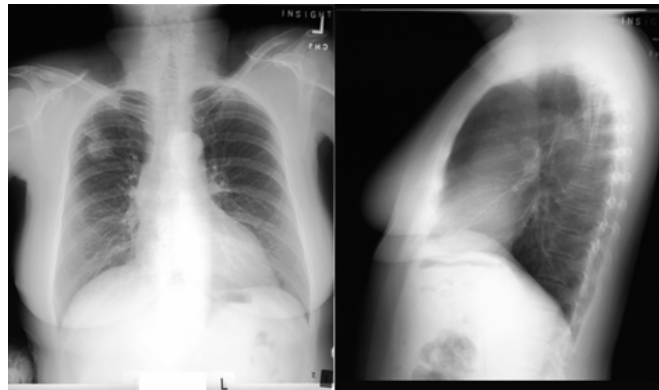
Diagnosis

- Testing healthy people for lung cancer
 - Those with increased risk may consider lung cancer screening

- If there is suspicion based on history and physical

- Imaging tests

- CXR
- CT Scan

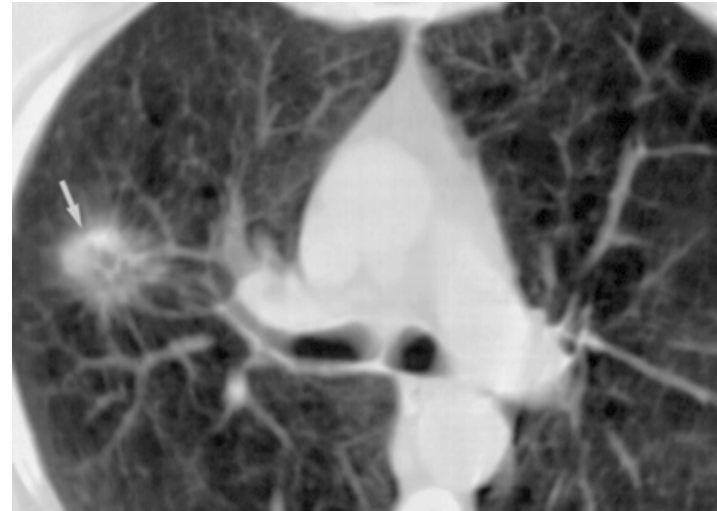


- Sputum cytology

- Biopsy

Tests For Lung Cancer

- Bronchoscopy—flexible camera to view the airway and take tissue samples
- Computed tomography (CT) scan of the lungs to identify abnormal tissue masses
- Positron emission tomography (PET) scan of the lungs to look for cancer cells
- Bone scan to determine whether the cancer has spread to the bones
- Needle or excisional biopsy



Lung Cancer Treatment

- Depends on cancer stage and patient's health
- Staging work-up includes:
 - PET/CT
 - Brain MRI
 - May lead to further evaluation with endobronchial ultrasound or mediastinoscopy

Lung Cancer Treatment By Stage

- Stage I
 - Surgery (lobectomy) or radiation therapy
- Stage II
 - Surgery (lobectomy)
 - Chemotherapy and radiation
- Stage III
 - Chemotherapy and radiation
 - Sometimes surgery can be performed after chemoXRT
- Stage IV
 - Chemotherapy and radiation

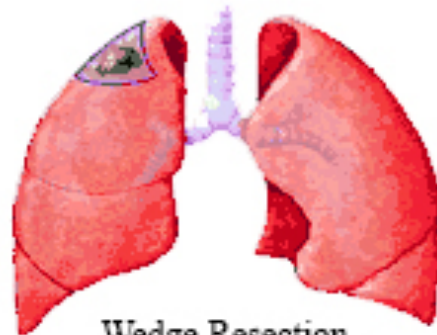
Chemotherapy and Radiation

- Radiation
 - Stereotactic Radiosurgery (STRS)
 - External Beam
- Chemotherapy
 - Cisplatin or carboplatin in combination with:
 - Docetaxel, gemcitabine, paclitaxel, or pemetrexed
- Targeted Treatments
 - Erlotinib
 - Bevacizumab
 - Immunotherapy
 - Monoclonal antibodies
 - Therapeutic vaccines
 - Checkpoint inhibitors
 - Adoptive T-cell transfer

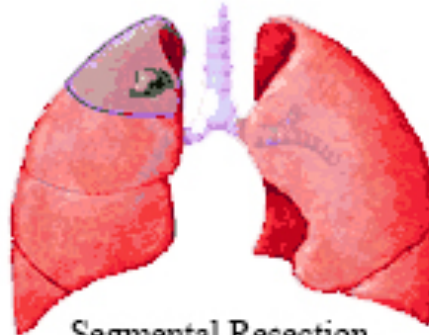
Operative Management

- Pneumonectomy
 - Historical gold standard for all stages of lung cancer
 - Associated with higher morbidity and mortality
 - Reserved for disease that cannot be completely removed by lobectomy in patients with acceptable risk
- Lobectomy
 - Minimum resection for even the earliest stage lesions in patients with adequate pulmonary reserve
 - Associated with lower local regional recurrence than limited resection
 - Sleeve lobectomy
- Segmentectomy/Wedge resection
 - Lesser resection of choice in patients with severely compromised pulmonary function
 - Associated with an increase in local-regional recurrence

Operative Management



Wedge Resection



Segmental Resection



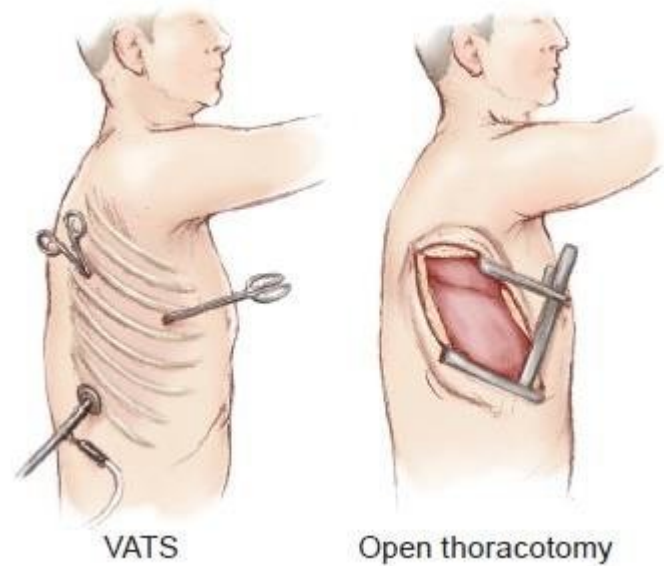
Lobectomy



Pneumonectomy

VATS Advantages versus Thoracotomy

- Minimally invasive
- Less painful
- Faster recovery
 - Shorter chest tube duration
 - Shorter hospitalization
 - Faster return to pre-op activities
 - Lower cost of care
- Ability to offer resection to the frail or higher risk pt
- No differences in long term survival outcomes



Treatment and Outcomes

<u>Stage</u>	<u>5yr Survival</u>	<u>Treatment</u>
I	1a - 70-85% 1b – 60-70%	Surgery only STRS if not surgical candidate
II	II - 40-50%	Surgery(+ chemo)
III	IIIa - 10-20% If Chemo/XRT response = 30+% IIIb – 10%	Pre-op chemo/XRT Chemo/XRT
IV	0-3%	Chemo/XRT

How employers can support their employees during cancer treatment?

- Help employees understand what benefits are available to them
 - Medical and prescription coverages (deductibles, co-pays, precertification requirements, etc.)
 - Leave policies
 - Offer flexible schedule and remote work options, if available
 - Employee assistance programs (financial, social, mental, etc.)
 - Community resources and support groups
- Offer professional guidance
- Make workplace accommodations

Preventing Lung Cancer

- **Do not smoke!!!**

- Best way not to smoke is to never start

- Counseling

- <https://ashline.org>

- <https://www.lung.org>

- Healthcare professionals

- Skills Training

- Medication

- Nicotine replacement

- Centrally acting agents

- varenicline

- bupropion



Preventing Lung Cancer (Continued)

- Reduce or eliminate radon exposure
- Avoid exposure to known cancer causing chemicals
- Follow a healthy diet

- Lung cancer screening for high risk patients

Lung Cancer screening

- What is screening?
 - A test done to detect cancer before symptoms develop
 - Symptoms of lung cancer typically do not appear until the disease is advanced

- Why hasn't lung cancer screening been routine?
 - Until recently, there hasn't been an effective test
 - Lung cancer screening with CXR showed no benefit (no change in lung cancer deaths)

National Lung Screening Trial

- Clinical trial 2002-2007
- Over 50,000 patients at risk for lung cancer
 - 55-74 years old
 - Current or former smokers
- Randomized to annual low-dose CT scan or to CXR

Source: New England Journal of Medicine August 4th, 2011

National Lung Screening Trial (Continued)

- People who got low-dose CT scans had a 20% decreased risk of dying from lung cancer
 - 320 people need to be screened to prevent 1 lung cancer death
 - 1339 for breast cancer
 - More cancers detected at an early stage
- First time that lung cancer screening has been shown to decrease lung cancer deaths!
- Results announced in 2010

Source: New England Journal of Medicine August 4th, 2011

Who Should Get Screened?

- Patients should be asked about their smoking history. Those who have ALL of the criteria below are recommended to get screened
 - 55-74 years old
 - Are current smokers or have quit smoking within the last 15 years
 - Have at least a 30 pack year smoking history
 - No symptoms of lung cancer
 - Have received counseling to quit smoking (if still smoking)
 - Have been informed about the possible benefits, limits, and harms of LDCT screening
 - Have a facility where they can go to that has a lung cancer screening program

Lung Cancer Screening

- Doctors should talk to higher risk patients about their individual risk for cancer and how they may fit into the lung cancer screening guideline
- Screening should only be done at facilities that have:
 - The right type of CT scan
 - Experience in using low dose CT scans for lung cancer screening
 - A team of specialists that can provide the appropriate care, treatment, and follow-up of patients with abnormal scans

What is the Benefit of Lung Cancer Screening?

- Detection of lung cancer early when it is curable
- 7 million Americans are estimated to be eligible for lung cancer screening
 - Could potentially save 22,000 lives

What are the Risks of Lung Cancer Screening?

- False positives
 - Finding a nodule (spot) that is not cancer
 - Most nodules (95%) seen on CT are not cancer
 - May require additional testing
- False negatives
 - A negative screening CT does not mean you don't have lung cancer or can't get lung cancer
- Radiation exposure
 - Low-dose CT ~ 20-25% of standard CT
 - Similar to 12 CXRs
 - Similar to 6 months of natural background radiation
- Cost
 - Most insurance companies cover lung cancer screening
 - There may be cost for additional CT scans and testing for positive results

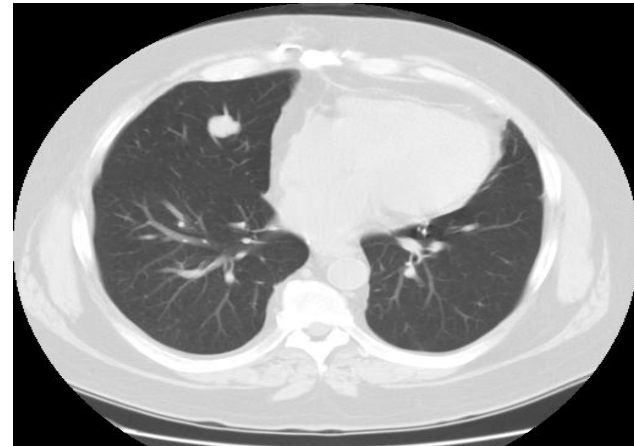
What To Expect

- Low-dose CT
 - No IV or dye used
 - Scan completed in under a minute



What Do The Results Mean?

- Negative screen
 - No nodules (spots) seen and no other abnormalities
 - Annual low-dose CT scan
- Positive screen indeterminate for lung cancer
 - A nodule (spot) was seen
 - About 50% of patients will have at least one nodule
 - Most of these spots are NOT cancer
- Positive screen suspicious for lung cancer
 - Further testing or biopsy may be recommended



What Do The Results Mean? (Continued)

- What if I have a nodule (spot)?
- We may recommend:
 - Follow up scan in 3-6 months
 - Further testing such as a PET scan
 - Referral to a specialist for possible biopsy

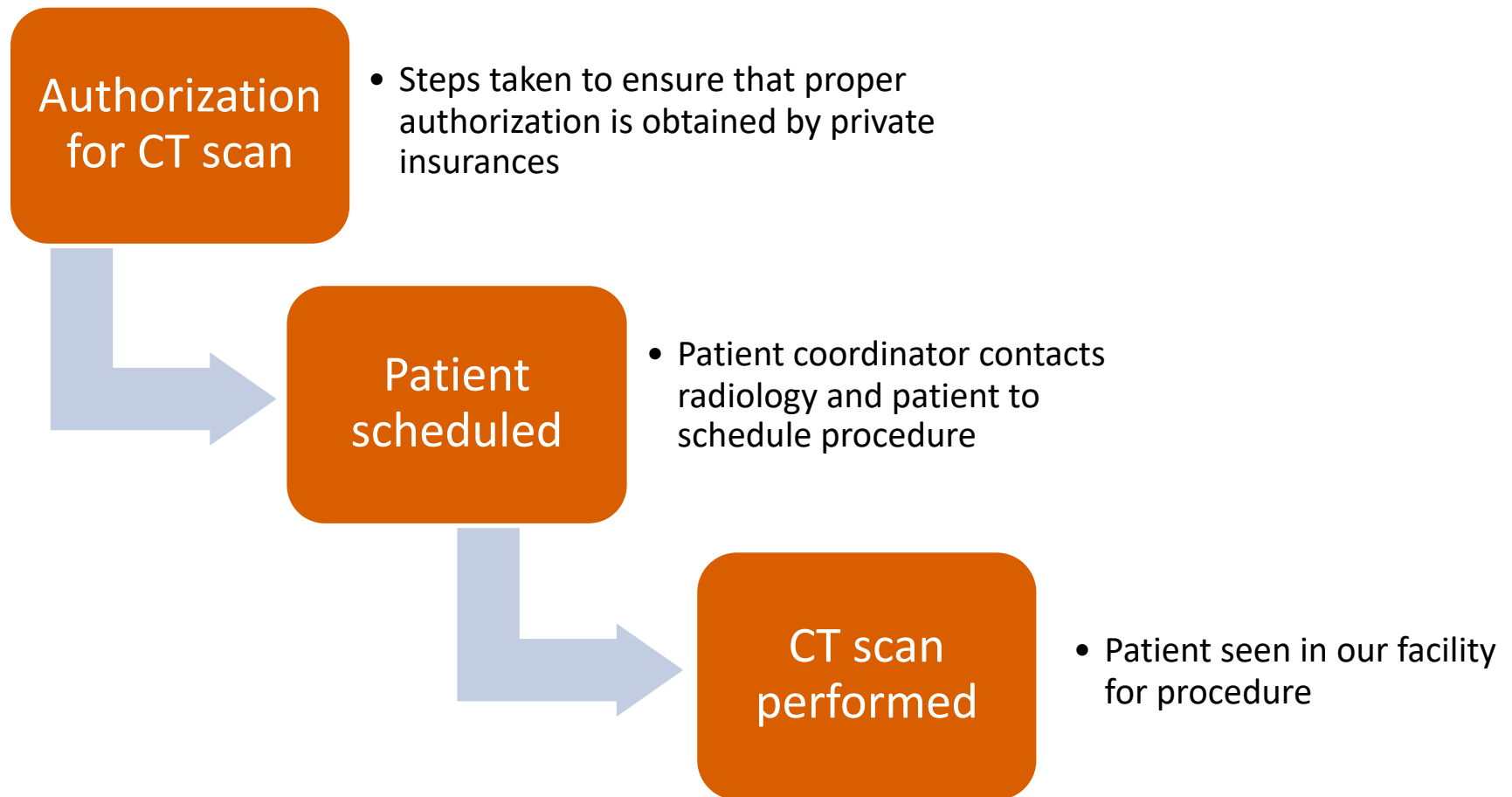
What Patients Need To Know

- Annual screening with low-dose CT is covered by Medicare and many private insurance plans if patients meet the guidelines
 - Age 55-77
 - ≥ 30 pack years smoking history
 - Current smoker or quit within 15 years
 - Shared decision making visit

A Little About Our Program

- Lung Cancer Screening program launched in 2011
- Multi-disciplinary team: pulmonary, radiology, thoracic surgery, oncology, infectious disease, family practice
- To date, have screened over 1400 patients
- Accredited ACR site – nationally recognized
- High rate of pulmonary nodules due to Valley Fever, but still a very low intervention rate of 2%
- For more information about the Lung Cancer Screening Program at the Norton Thoracic Institute, **call 855.577.3572**

Eligible Patient Steps:

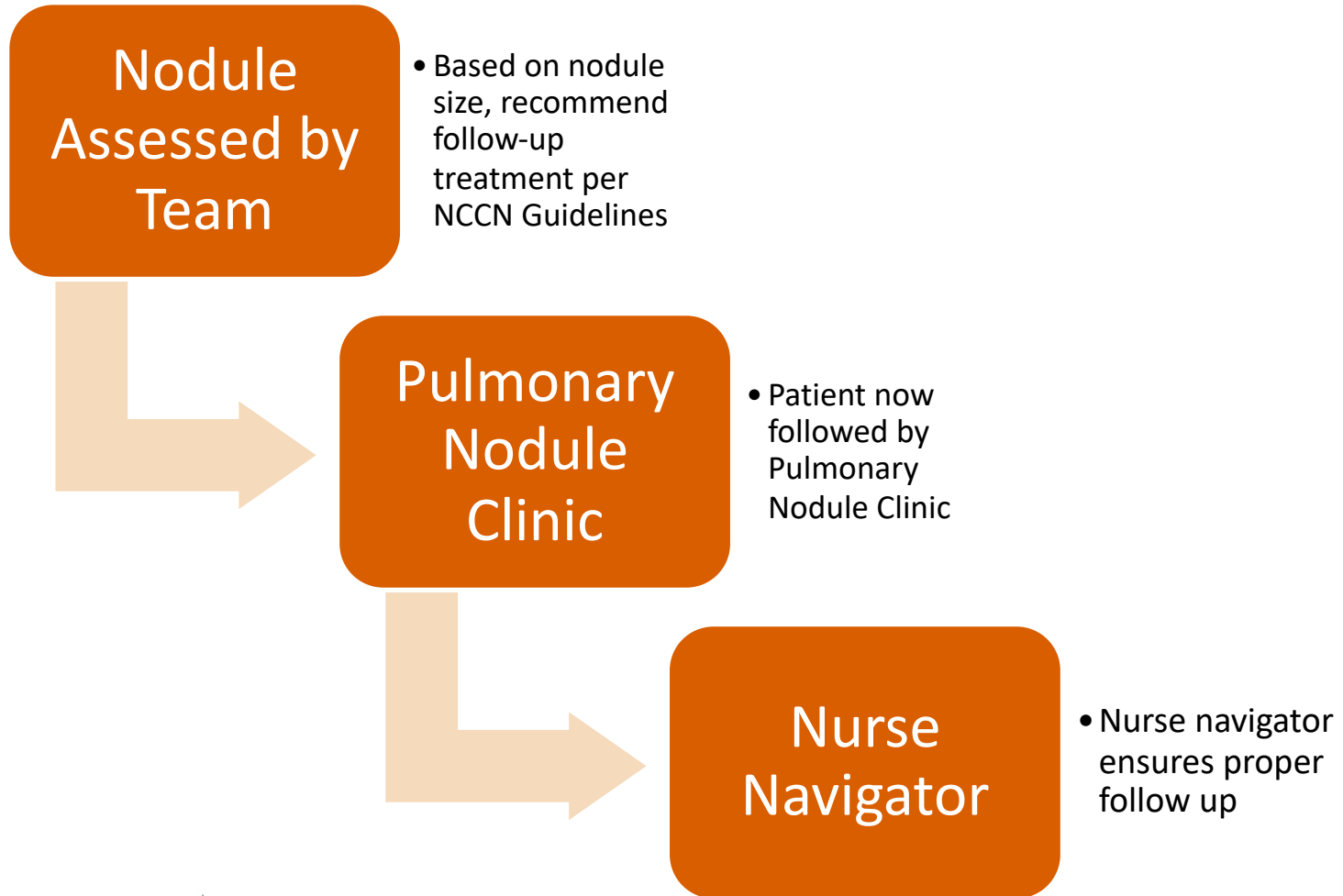


Pulmonary Nodule Clinic

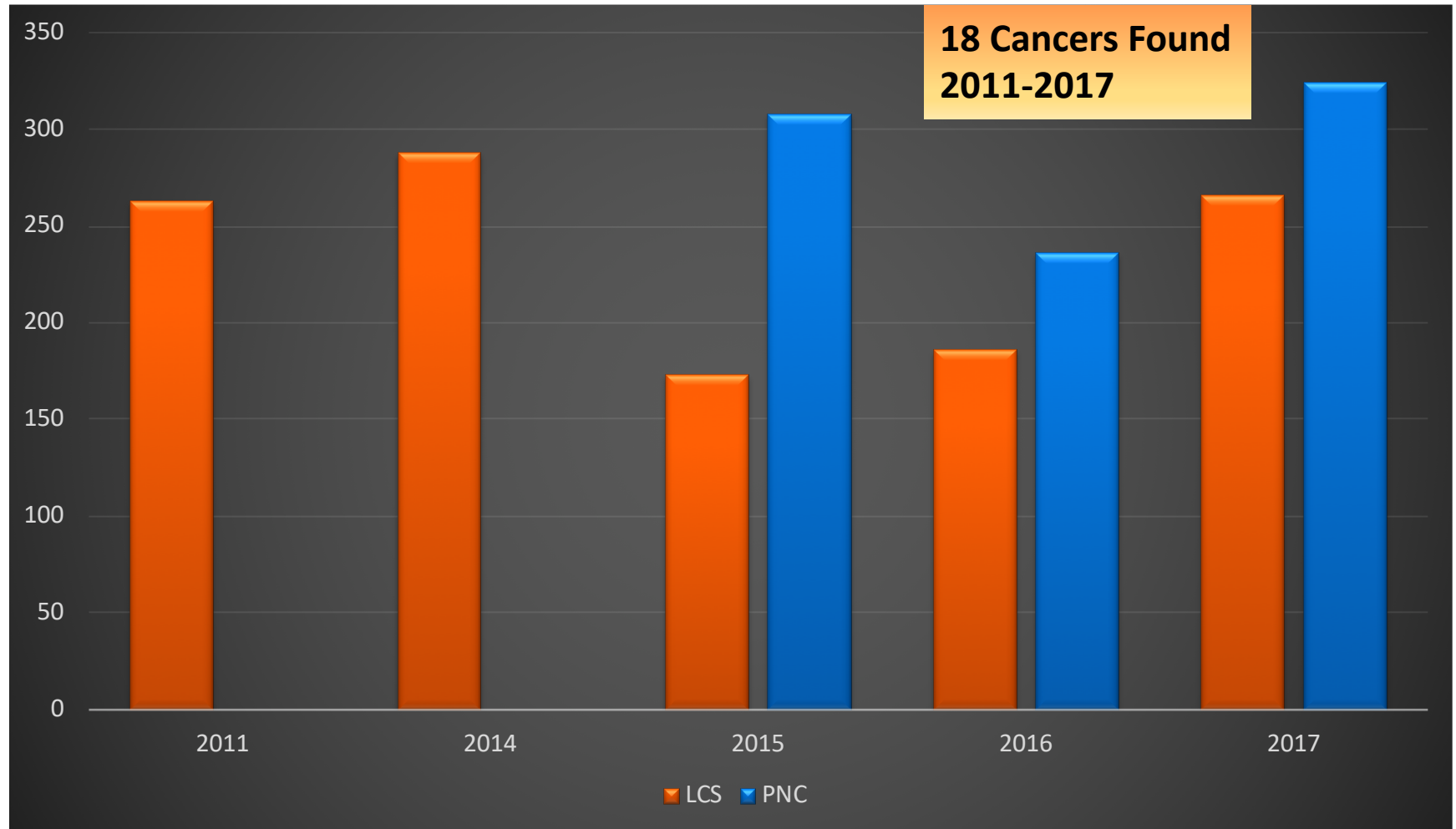
- Goal is to identify nodules in early stages of lung cancer
- Most stage 1 and 2 patients are asymptomatic
- 85% of lung cancer patients are identified in stages 3 and 4
- Patients may be referred from PCP, pulmonologists, lung cancer screening program, or self referral



Positive Nodule Findings



Lung Cancer Screening (LCS) and Pulmonary Nodule Clinic (PNC)



What About E-cigarettes?

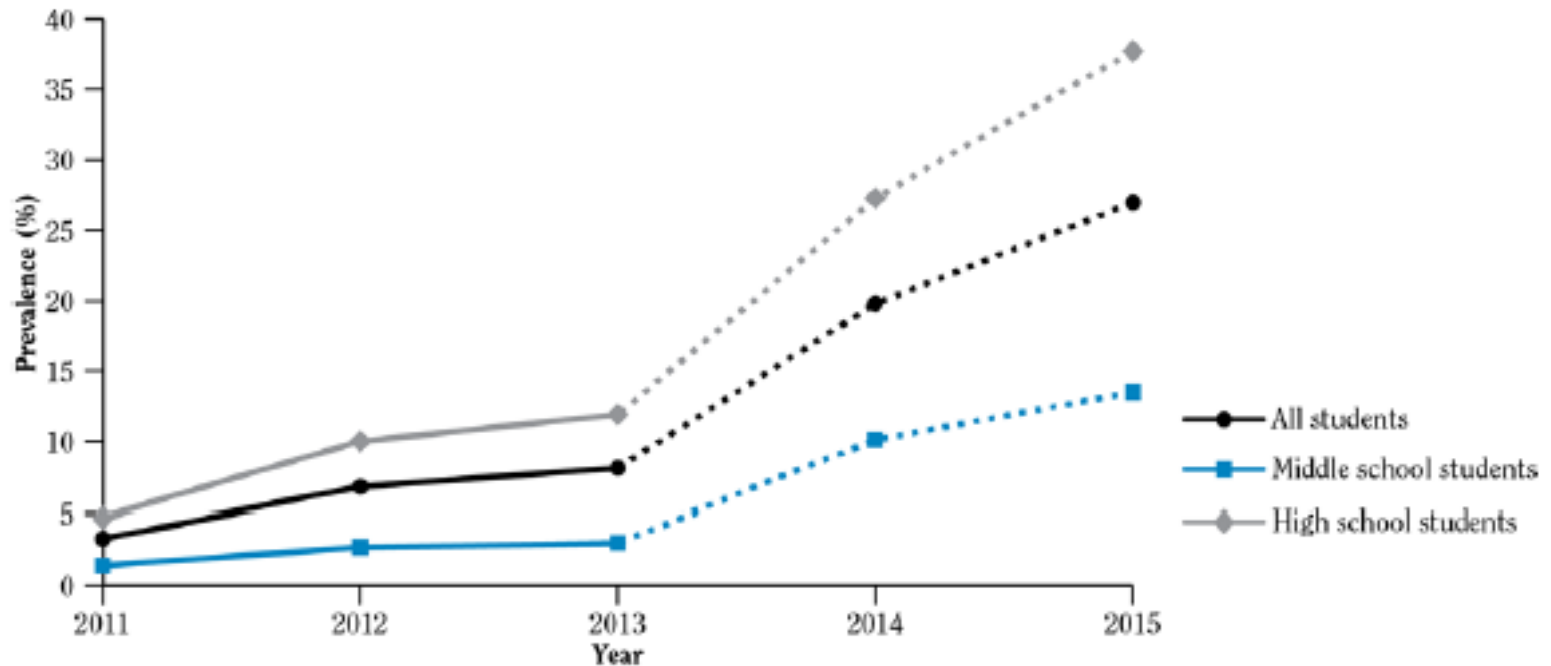


What About E-cigarettes? (Continued)

- E-cigarettes are devices that heat a liquid into an aerosol that the user inhales
- E-cigarettes are considered tobacco products
- They can contain harmful and potentially harmful ingredients:
 - Nicotine
 - Ultrafine particles that can be inhaled deep into the lungs
 - Flavorants such as diacetyl, a chemical linked to serious lung disease
 - Volatile organic compounds
 - Heavy metals, such as nickel, tin, and lead

What About E-cigarettes? (Continued)

Figure 1 Trends in ever e-cigarette use^a among U.S. middle and high school students; National Youth Tobacco Survey (NYTS) 2011–2015



Source: Centers for Disease Control and Prevention 2013, 2014; unpublished data (data: NYTS 2015).

Note: In 2014, modifications were made to the e-cigarette measure to enhance its accuracy, which may limit the comparability of this estimate to those collected in previous years. The dotted lines from 2013 to 2015 represent these differences.

^aIncludes those who responded “yes” to the following question: “Have you ever used an electronic cigarette or e-cigarette, even once or twice?”

What About E-cigarettes? (Continued)

- No matter how it's delivered, nicotine is addictive and harmful
- Users risk exposing their respiratory systems to harmful chemicals
- Brain risks
 - Nicotine addiction, mood disorders, lowering of impulse control
 - Addiction is a form of learning and adolescents are likely to become more easily addicted
- Behavior risks
 - E-cigarette use has been linked to alcohol use and marijuana

What About E-cigarettes? (Continued)

- Outbreak of lung injury associated with use of vaping products
- As of October 22, 2019, 1,604 cases of e-cigarette product use associated lung injury (EVALI) have been reported to CDC
- 34 deaths confirmed in 24 states
- All EVALI patients reports history of e-cigarette or vaping products
 - THC is present in most samples
- CDC and FDA have not identified the causes of the lung injuries in these cases
 - No compound or ingredient has been identified as a source
 - Some pathology reports show that vaping causes fat to accumulate in the lungs and that triggers an inflammatory response

What About E-cigarettes? (Continued)

- How do we diagnose EVALI (e-cigarette, or vaping, product use-associated lung injury)?
 - If patients present with respiratory or GI symptoms – ask about use of e-cigarettes
 - Considered a diagnosis of exclusion
 - No test or marker
 - Evaluate vitals, check respiratory viral panel, CBC, toxicology including THC
 - CXR or CT chest
 - Treatment includes steroids, influenza antivirals, antibiotics for PNA

What About E-cigarettes? (Continued)

- E-cigarette use poses a significant – and avoidable – health risk
- What can we do?
 - Start the conversation with kids and adults about the health risks
 - Reduce exposure
 - Restrict e-cigarette use
 - Visit tobacco free locations
 - Be an example
 - Talk to your health care providers
 - Helpful link: www.e-cigarettes.surgeongeneral.gov

Thank You!

For more information about lung cancer or to request a speaker for your worksite on any cancer-related topic

Call: 602.699.3366





Q&A

**PLEASE ENTER YOUR
QUESTIONS IN THE CHAT.**

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A background image of a cityscape with mountains in the distance, overlaid with a blue gradient. The text "CONTACT US" is centered in large, white, bold, sans-serif capital letters.

CONTACT US



**THANK YOU
FOR WATCHING!**

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